

AD _____

Award Number: DAMD17-03-1-0744

TITLE: Bisphosphonate-Based Contrast Agents for Radiological
Imaging of Microcalcifications

PRINCIPAL INVESTIGATOR: Matthew R. Palmer, Ph.D.

CONTRACTING ORGANIZATION: Beth Israel Deaconess Medical Center
Boston, Massachusetts 02215

REPORT DATE: September 2004

TYPE OF REPORT: Annual

PREPARED FOR: U.S. Army Medical Research and Materiel Command
Fort Detrick, Maryland 21702-5012

DISTRIBUTION STATEMENT: Approved for Public Release;
Distribution Unlimited

The views, opinions and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy or decision unless so designated by other documentation.

20050415 169

REPORT DOCUMENTATION PAGEForm Approved
OMB No. 074-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503

1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE September 2004	3. REPORT TYPE AND DATES COVERED Annual (1 Sep 2003 - 31 Aug 2004)	
4. TITLE AND SUBTITLE Bisphosphonate-Based Contrast Agents for Radiological Imaging of Microcalcifications			5. FUNDING NUMBERS DAMD17-03-1-0744	
6. AUTHOR(S) Matthew R. Palmer, Ph.D.				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Beth Israel Deaconess Medical Center Boston, Massachusetts 02215 <i>E-Mail:</i> mpalmer@bidmc.harvard.edu			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Medical Research and Materiel Command Fort Detrick, Maryland 21702-5012			10. SPONSORING / MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for Public Release; Distribution Unlimited				12b. DISTRIBUTION CODE
13. ABSTRACT (Maximum 200 Words) The overall objective of this project is to develop biochemical markers for calcium that serve as contrast agents in advanced imaging procedures. We have had significant delays in starting this project and so a no-cost extension was requested and granted in August 2004. No reportable outcomes are yet available.				
14. SUBJECT TERMS Breast cancer; radiological imaging; contrast agents; bisphosphonate mammography; MRI;				15. NUMBER OF PAGES 4
				16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT Unlimited	

Table of Contents

Cover.....	1
SF 298.....	2
Introduction.....	3
Body.....	4
Key Research Accomplishments.....	4
Reportable Outcomes.....	4
Conclusions.....	4
References.....	
Appendices.....	

INTRODUCTION

The overall objective of this work is to develop biochemical markers for calcium that serve as contrast agents in advanced imaging procedures. We will focus on alendronate derivatives as targeting compounds for imaging soft tissue calcium. Specifically we intend to develop a molybdenum-bisphosphonate complex for use in dual energy digital subtraction mammography and a bisphosphonate-gadolinium chelate for use in MR breast imaging. We will perform associated initial testing and small animal imaging experiments. Because of its unique ability to reveal microcalcifications, mammography can detect small carcinomas at an early stage. A MR contrast agent that targets calcium deposited in soft tissue could potentially have a very high impact in the field of diagnostic imaging in breast cancer. Similarly, a potent and specific marker for calcium could greatly enhance the diagnostic potential of dual-energy digital subtraction mammographic breast imaging.

BODY

During the past year, the principal investigator has undergone significant changes in his job responsibilities and has become increasingly involved in medical physics activities in the Division of Nuclear Medicine. Consequently, there was a significant delay in starting this project. A no-cost extension of the project was requested and granted in August 2004. The focus for the coming year will be on completing the original project objectives.

KEY RESEARCH ACCOMPLISHMENTS

REPORTABLE OUTCOMES

None to date

CONCLUSIONS

Significant delays in starting this project have occurred. We now expect to complete the project, as originally proposed, during the extension year.